

CLAIMS

1

1 1. A printer for printing time-based media, the printer comprising:
2 a communication interface for receiving time-based media data from a media
3 source;
4 a processor for performing a multimedia function on the time-based media
5 data to obtain an electronic image and associated print data;
6 a user interface, communicatively coupled to the processor, including:
7 a display, for providing data to a user;
8 an input device, for receiving data from the user;
9 a first output device for receiving the associated print data from the processor
10 and producing output on a printer; and
11 a second output device coupled to the processor for receiving the electronic
12 image and producing an electronic output from the image.

1 2. The printer of claim 1 wherein the multimedia function includes selecting
2 a range of audio data in response to received input from the user.

1 3. The printer of claim 1 wherein the multimedia function includes applying
2 audio event detection to the time-based media data.

1 4. The printer of claim 3 wherein the multimedia function further includes
2 determining a confidence level associated with the audio event detection.

1 5. The printer of claim 1 wherein the multimedia function includes applying
2 a speaker segmentation function to the time-based media data.

1 6. The printer of claim 1 or 5 wherein the multimedia function includes
2 applying a speaker recognition function to the time-based media data.

1 7. The printer of claim 1 wherein the multimedia function includes applying
2 a sound source localization function to the time-based media data.

1 8. The printer of claim 7 wherein the multimedia function further includes
2 applying audio event detection to the time-based media data.

1 9. The printer of claim 1 wherein the multimedia function includes applying
2 a speech recognition function to the time-based media data.

1 10. The printer of claim 9 wherein the multimedia function includes
2 applying a profile analysis function to the time-based media data.

1 11. The printer of claim 9 wherein the multimedia function includes
2 applying an audio event detection function to the time-based media data.

1 12. The printer of claim 11 wherein the multimedia function further includes
2 applying a speaker recognition function to the time-based media data.

1 13. The printer of claim 11 wherein the multimedia function further includes
2 applying a speaker segmentation function to the time-based media data.

1 14. The printer of claim 11 wherein the multimedia function further includes
2 applying a sound localization function to the time-based media data.

1 15. The printer of claim 1 wherein the multimedia function includes selecting
2 a range of video data in response to received input from the user.

1 16. The printer of claim 1 wherein the multimedia function includes
2 applying a video event detection function to the time-based media data.

1 17. The printer of claim 1 wherein the multimedia function includes
2 applying a color histogram analysis function to the time-based media data.

1 18. The printer of claim 1 wherein the multimedia function includes
2 applying a face detection function to the time-based media data.

1 19. The printer of claim 18 wherein the multimedia function includes
2 applying a clustering function to the time-based media data to merge multiple
3 instances of a face into a representative face image.

1 20. The printer of claim 1 wherein the multimedia function includes
2 applying a face recognition function to the time-based media data.

1 21. The printer of claim 1 wherein the multimedia function includes
2 applying an optical character recognition function to the time-based media data.

1 22. The printer of claim 21 wherein the multimedia function further includes
2 applying a clustering function to the time-based media data to merge similar results
3 of the optical character recognition.

1 23. The printer of claim 1 wherein the multimedia function includes
2 applying a motion analysis function to the time-based media data.

1 24. The printer of claim 1 or claim 23 wherein the multimedia function
2 includes applying a distance estimation function to the time-based media data.

1 25. The printer of claim 1 wherein the multimedia function includes
2 applying foreground/background segmentation function to the time-based media
3 data.

1 26. The printer of claim 1 wherein the multimedia function includes
2 applying a scene segmentation function to the time-based media data.

1 27. The printer of claim 26 wherein the multimedia function further includes
2 applying a face recognition recognition function to the time-based media data.

1 28. The printer of claim 26 wherein the multimedia function further includes
2 applying a face detection function to the time-based media data.

1 29. The printer of claim 26 wherein the multimedia function includes
2 applying an optical character recognition function to the time-based media data.

1 30. The printer of claim 29 wherein the multimedia function further includes
2 applying a face recognition function to the time-based media data.

1 31. The printer of claim 29 wherein the multimedia function includes
2 applying a face detection function to the time-based media data.

1 32. The printer of claim 1 wherein the multimedia function includes
2 applying an automobile recognition function to the time-based media data.

1 33. The printer of claim 32 wherein the multimedia function further includes
2 applying a motion analysis function to the time-based media data.

1 34. The printer of claim 1 wherein the multimedia function includes
2 applying a license plate recognition function to the time-based media data.

1 35. The system of claim 1 wherein the multimedia function includes
2 applying a visual inspection function to the time-based media data.

1 36. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a compact disc (CD) device.

1 37. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a digital video disc (DVD) device.

1 38. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control an audio tape device.

1 39. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a video tape device.

1 40. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a multimedia server.

1 41. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control encryption hardware.

1 42. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control audio sound localization hardware.

1 43. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control motion detection hardware.

1 44. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a MIDI player.

1 45. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a cellular telephone.

1 46. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a two-way radio.

1 47. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a world wide web display.

1 48. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a climate sensor.

1 49. The printer of claim 1 wherein the user interface is configured to allow a
2 user to control a radio receiver.

1 50. The printer of claim 1 wherein the processor is further configured to
2 display results of the multimedia function on the display of the user interface.

1 51. The printer of claim 1 wherein the second output device is a DVD drive.

1 52. The printer of claim 1 wherein the second output device is a CD drive.

1 53. The printer of claim 1 wherein the second output device is an audio tape
2 drive.

1 54. The printer of claim 1 wherein the second output device is a video
2 cassette device.

1 55. The printer of claim 1 wherein the second output device is a removable
2 media device.

1 56. The printer of claim 1 wherein the second output device is an embedded
2 audio recorder.

1 57. The printer of claim 1 wherein the second output device is an embedded
2 video recorder.

1 58. The printer of claim 1 wherein the second output device is a non-volatile
2 storage device.

1 59. The printer of claim 1 wherein the second output device is an embedded
2 multimedia server.

1 60. The printer of claim 1 wherein the second output device is audio
2 encryption hardware.

1 61. The printer of claim 1 wherein the second output device is video
2 encryption hardware.

1 62. The printer of claim 1 wherein the second output device is audio sound
2 localization hardware.

1 63. The printer of claim 1 wherein the second output device is a cellular
2 telephone.

1 64. The printer of claim 1 wherein the second output device is a two-way
2 radio.

1 65. The printer of claim 1 wherein the second output device is a world-wide
2 web display.

1 66. The printer of claim 1 wherein the second output device is a radio
2 receiver for receiving AM signals.

1 67. The printer of claim 1 wherein the second output device is a radio
2 receiver for receiving FM signals.

1 68. The printer of claim 1 wherein the second output device is a radio
2 receiver for receiving short wave signals.

1 69. The printer of claim 1 wherein the second output device is a satellite
2 radio receiver.

1 70. The printer of claim 1 wherein the second output device is a weather alert
2 receiver.

1 71. The printer of claim 1 wherein the second output device is an emergency
2 alert monitor for receiving emergency broadcast system alerts.

1 72. The printer of claim 1 wherein the second output device is hardware for
2 performing VGA screen captures.

1 73. The printer of claim 1 wherein the second output device is hardware for
2 performing audio capture.

1 74. The printer of claim 1 wherein the second output device is hardware for
2 capturing data from an electronic pen.

1 75. The printer of claim 1 wherein the second output device is a disposable
2 media writer.

1

2 76. The printer of claim 1 wherein the second output device is a flash
3 memory device.

1 77. The printer of claim 1 wherein the second output device is a wireless
2 device.

1 78. A method for printing time-based media, the method comprising:
2 receiving time-based media data from a media source;
3 receiving user input, the user input specifying a multimedia function to
4 perform on the time-based media;
5 performing the specified multimedia function on the time-based media data
6 to obtain an electronic image and associated print data;
7 producing output on a printer from the associated print data from the
8 processor and; and
9 producing an electronic output from the electronic image.

1 79. The method of claim 78 wherein the multimedia function includes
2 selecting a range of audio data in response to received input from the user.

1 80. The method of claim 1 wherein the multimedia function includes
2 applying audio event detection to the time-based media data.

1 81. The method of claim 80 wherein the multimedia function further
2 includes determining a confidence level associated with the audio event detection.

1 82. The method of claim 78 wherein the multimedia function includes
2 applying a speaker segmentation function to the time-based media data.

1 83. The method of claim 78 or 82 wherein the multimedia function includes
2 applying a speaker recognition function to the time-based media data.

1 84. The method of claim 78 wherein the multimedia function includes
2 applying a sound source localization function to the time-based media data.

1 85. The method of claim 84 wherein the multimedia function further
2 includes applying audio event detection to the time-based media data.

1 86. The method of claim 78 wherein the multimedia function includes
2 applying a speech recognition function to the time-based media data.

1 87. The method of claim 86 wherein the multimedia function includes
2 applying a profile analysis function to the time-based media data.

1 88. The method of claim 86 wherein the multimedia function includes
2 applying an audio event detection function to the time-based media data.

1 89. The method of claim 88 wherein the multimedia function further
2 includes applying a speaker recognition function to the time-based media data.

1 90. The method of claim 88 wherein the multimedia function further
2 includes applying a speaker segmentation function to the time-based media data.

1 91. The method of claim 88 wherein the multimedia function further
2 includes applying a sound localization function to the time-based media data.

1 92. The method of claim 78 wherein the multimedia function includes
2 selecting a range of video data in response to received input from the user.

1 93. The method of claim 78 wherein the multimedia function includes
2 applying a video event detection function to the time-based media data.

1 94. The method of claim 78 wherein the multimedia function includes
2 applying a color histogram analysis function to the time-based media data.

1 95. The method of claim 78 wherein the multimedia function includes
2 applying a face detection function to the time-based media data.

1 96. The method of claim 95 wherein the multimedia function includes
2 applying a clustering function to the time-based media data to merge multiple
3 instances of a face into a representative face image.

1 97. The method of claim 78 wherein the multimedia function includes
2 applying a face recognition function to the time-based media data.

1 98. The method of claim 78 wherein the multimedia function includes
2 applying an optical character recognition function to the time-based media data.

1 99. The method of claim 98 wherein the multimedia function further
2 includes applying a clustering function to the time-based media data to merge
3 similar results of the optical character recognition.

1 100. The method of claim 78 wherein the multimedia function includes
2 applying a motion analysis function to the time-based media data.

1 101. The method of claim 78 or claim 100 wherein the multimedia function
2 includes applying a distance estimation function to the time-based media data.

1 102. The method of claim 78 wherein the multimedia function includes
2 applying foreground/background segmentation function to the time-based media
3 data.

1 103. The method of claim 78 wherein the multimedia function includes
2 applying a scene segmentation function to the time-based media data.

1 104. The method of claim 103 wherein the multimedia function further
2 includes applying a face recognition recognition function to the time-based media
3 data.

1 105. The method of claim 103 wherein the multimedia function further
2 includes applying a face detection function to the time-based media data.

1 106. The method of claim 103 wherein the multimedia function includes
2 applying an optical character recognition function to the time-based media data.

1 107. The method of claim 106 wherein the multimedia function further
2 includes applying a face recognition function to the time-based media data.

1 108. The method of claim 106 wherein the multimedia function includes
2 applying a face detection function to the time-based media data.

1 109. The method of claim 78 wherein the multimedia function includes
2 applying an automobile recognition function to the time-based media data.

1 110. The method of claim 109 wherein the multimedia function further
2 includes applying a motion analysis function to the time-based media data.

1 111. The method of claim 78 wherein the multimedia function includes
2 applying a license plate recognition function to the time-based media data.

1 112. The method of claim 78 wherein the multimedia function includes
2 applying a visual inspection function to the time-based media data.